User Manual

Revision 1.001
English

PROFINET / Modbus TCP Slave - Converter

(Order Code: HD67612-A1)

For Website information:
www.adfweb.com?Product=HD67612

For Price information:
www.adfweb.com?Price=HD67612-A1

Benefits and Main Features:

- Very easy to configure
- Electrical isolation
- Two Ethernet ports (for Modbus TCP / PROFINET)
- Temperature range: -40°C/+85°C (-40°F/+185°F)

For other PROFINET products see also the following link:

Converter PROFINET to

www.adfweb.com?Product=HD67608	**(DeviceNet Master)**
www.adfweb.com?Product=HD67609	**(DeviceNet Slave)**
www.adfweb.com?Product=HD67610	**(J1939)**
www.adfweb.com?Product=HD67600	**(NMEA2000)**
www.adfweb.com?Product=HD67602	**(Modbus Master RS232)**
www.adfweb.com?Product=HD67602	**(Modbus Master RS485)**
www.adfweb.com?Product=HD67603	**(Modbus Slave RS232)**
www.adfweb.com?Product=HD67631	**(Modbus Slave RS485)**
www.adfweb.com?Product=HD67604	**(PROFIBUS Master)**
www.adfweb.com?Product=HD67605	**(PROFIBUS Slave)**
www.adfweb.com?Product=HD67606	**(CAN)**

Do you have your customer protocol? Then go to:
www.adfweb.com?Product=HD67003

Do you need to choose a device? Do you want help?
www.adfweb.com?Cmd=helpme

User Manual

INDEX:

	Page
INDEX	2
UPDATED DOCUMENTATION	2
REVISION LIST	2
WARNING	2
TRADEMARKS	2
SECURITY ALERT	3
EXAMPLE OF CONNECTION	4
CONNECTION SCHEME	5
CHARACTERISTICS	6
CONFIGURATION	6
POWER SUPPLY	7
FUNCTION MODES	8
LEDS	19
PROFINET / MODBUS TCP	10
USE OF COMPOSITOR SW67612	11
NEW PROJECT / OPEN PROJECT	12
SOFTWARE OPTIONS	13
SET COMMUNICATION	14
XML FILE	15
UPDATE DEVICE	16
MECHANICAL DIMENSIONS	18
ORDERING INFORMATIONS	19
ACCESSORIES	19
PLC CONFIGURATION	20
DISCLAIMER	25
OTHER REGULATIONS AND STANDARDS	25
WARRANTIES AND TECHNICAL SUPPORT	26
RETURN POLICY	26

UPDATED DOCUMENTATION:

Dear customer, we thank you for your attention and we remind you that you need to check that the following document is:

- Updated
- Related to the product you own

To obtain the most recently updated document, note the "document code" that appears at the top right-hand corner of each page of this document.

With this "Document Code" go to web page www.adfweb.com/download/ and search for the corresponding code on the page. Click on the proper "Document Code" and download the updates.

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.000	17/07/2013	Fl	All	First Release
1.001	27/01/2015	Ff	All	New Software Interface

WARNING:

ADFweb.com reserves the right to change information in this manual about our product without warning.
ADFweb.com is not responsible for any error this manual may contain.

TRADEMARKS:

All trademarks mentioned in this document belong to their respective owners.

SECURITY ALERT:

GENERAL INFORMATION

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device, legal and safety regulation are required for each individual application. The same applies also when using accessories.

INTENDED USE

Machines and systems must be designed so the faulty conditions do not lead to a dangerous situation for the operator (i.e. independent limit switches, mechanical interlocks, etc.).

QUALIFIED PERSONNEL

The device can be used only by qualified personnel, strictly in accordance with the specifications.
Qualified personnel are persons who are familiar with the installation, assembly, commissioning and operation of this equipment and who have appropriate qualifications for their job.

RESIDUAL RISKS

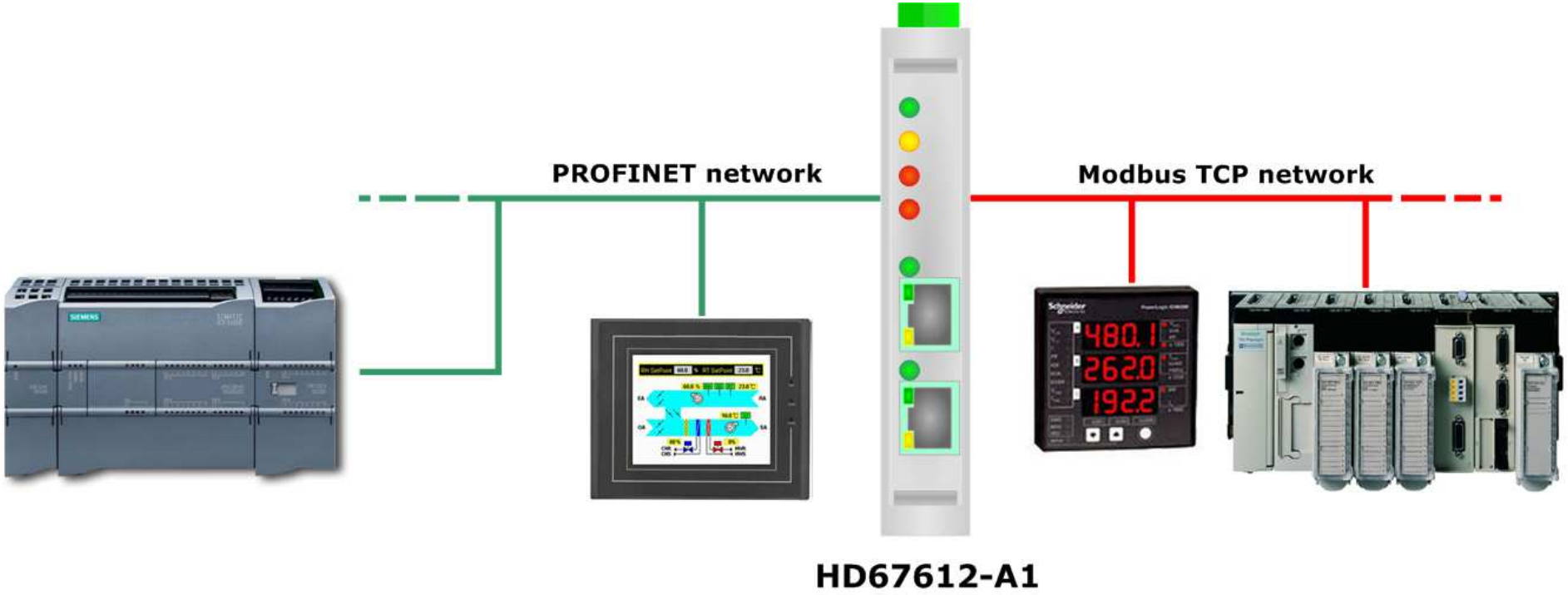
The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

CE CONFORMITY

The declaration is made by our company. You can send an email to support@adfweb.com or give us a call if you need it.

EXAMPLE OF CONNECTION:



CONNECTION SCHEME:

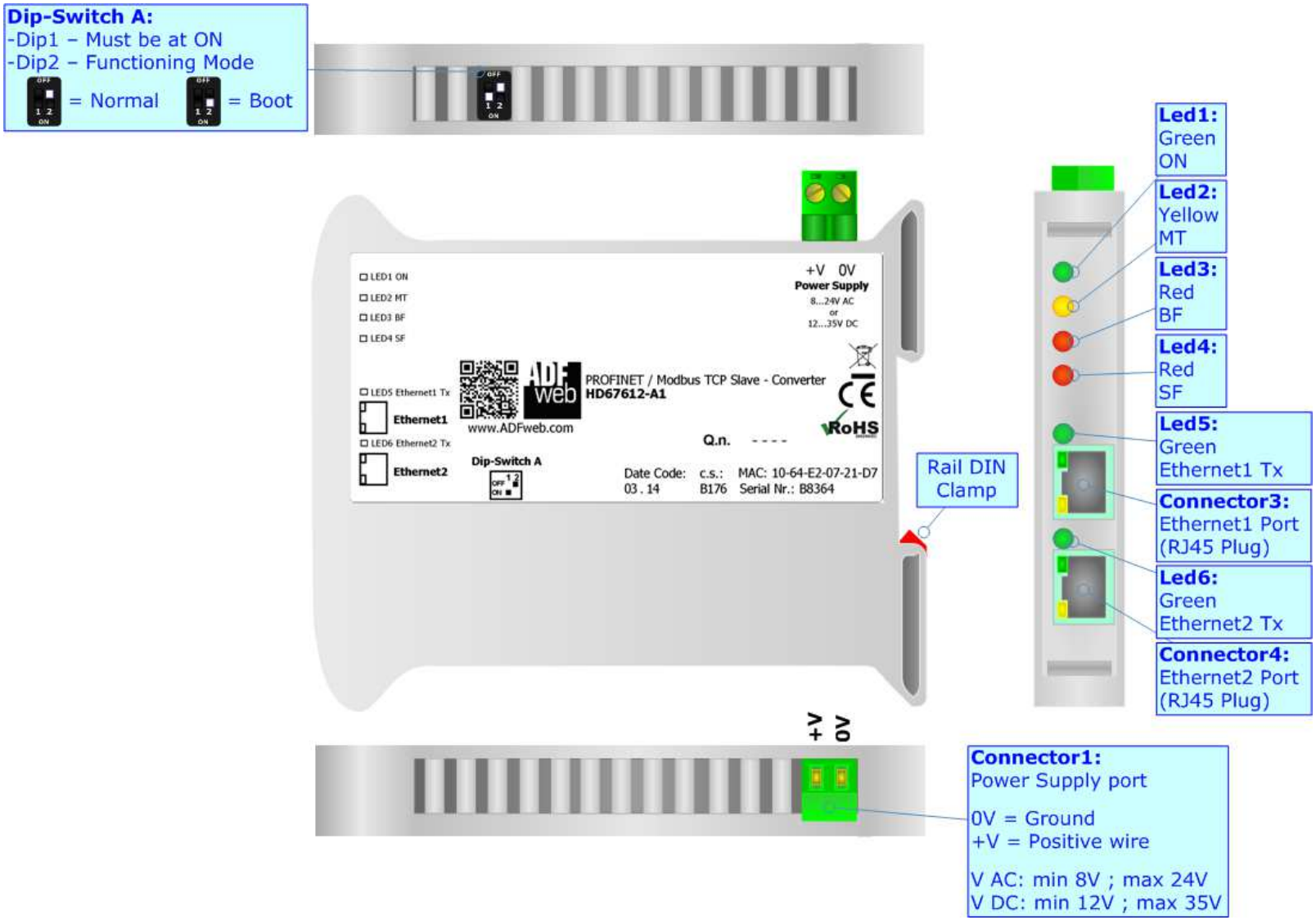


Figure 1: Connection scheme for HD67612-A1

CHARACTERISTICS:

The HD67612-A1 is a PROFINET / Modbus TCP Slave Converter.

It allows for the following characteristics:

- Up to 1440 bytes in reading and 1440 bytes in writing;
- Isolation between Modbus/PROFINET - Power Supply;
- Two-directional information between Modbus TCP bus and PROFINET bus;
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 8…24V AC or 12…35V DC;
- Wide temperature range: -40°C / 85°C [-40°F / +185°F].

CONFIGURATION:

You need Compositor SW67612 software on your PC in order to perform the following:

- Define the parameters of PROFINET line;
- Define the parameters of Modbus line;
- Define the Modbus data that a master read and where to take these information in the PROFINET array;
- Define the Modbus data that a master write and where to map these information in the PROFINET array;
- Generate the XML file to be imported on the master PROFINET;
- Update the device.

POWER SUPPLY:

The devices can be powered at 8…24V AC and 12…35V DC. For more details see the two tables below.

VAC ~		VDC ⎓	
Vmin	**Vmax**	**Vmin**	**Vmax**
8V	**24V**	**12V**	**35V**

Consumption at 24V DC:

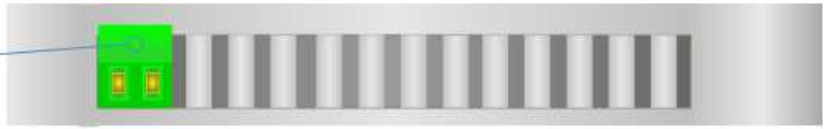
Device	Consumption [W/VA]
HD67612-A1	3.5

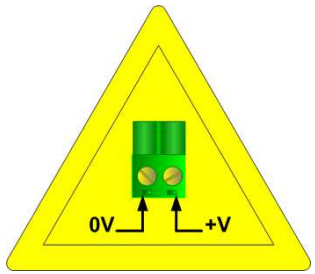
Caution: Do not reverse the polarity power

Connector1:
Power Supply port

0V = Ground
+V = Positive wire

V AC: min 8V ; max 24V
V DC: min 12V ; max 35V





HD67612-A1

FUNCTION MODES:

The device has got two function modes depending on the position of the 'Dip2 of Dip-Switch A':

- The first, with 'Dip2 of Dip-Switch A' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip2 of Dip-Switch A' at "ON" position, is used for uploading the Project and/or Firmware.

For the operations to follow for the updating, see 'UPDATE DEVICE' section.

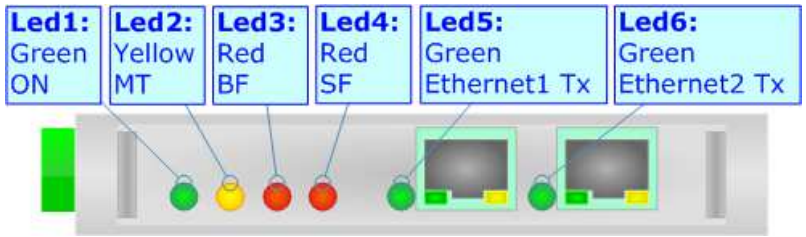
According to the functioning mode, the LEDs will have specific functions, see 'LEDS' section.

Warning:
Dip1 of 'Dip-Switch A' must be at ON position to work even if the Ethernet cable is not inserted.

LEDS:

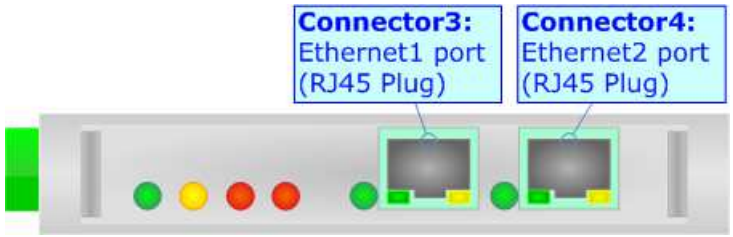
The device has got six LEDs that are used to give information about the functioning status.
The various meanings of the LEDs are described in the table below.

LED	Normal Mode	Boot Mode
1: ON [supply voltage] (green)	**ON:** Device powered **OFF:** Device not powered	**ON:** Device powered **OFF:** Device not powered
2: MT [maintenance display] (yellow)	**ON:** Maintenance problem is present **OFF:** No maintenance problems are present	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
3: BF [bus fault] (red)	**ON:** The Ethernet connection is defective; the IP address exists several times in the network; the own NameOfStation exists several times in the network; no IP address has been set **Flashing:** At least one configured AR is no longer in the data exchange **OFF:** No errors are present	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: SF [group error] (red)	**ON:** At least one AR is not in the data exchange **OFF:** No errors are present	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
5: Ethernet1 Tx (green)	Blinks when Ethernet frames are transmitted	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
6: Ethernet2 Tx (green)	Blinks when Ethernet frames are transmitted	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress



PROFINET / MODBUS TCP:

The PROFINET and Modbus TCP connection must be made using Connector3 and/or Connector4 of HD67612-A1 with at least a Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform to the T568 norms relative to connections in cat.5 up to 100 Mbps. To connect the device to a Hub/Switch the use of a straight cable is recommended. To connect the device to a PC/PLC/other the use of a cross cable is recommended.



USE OF COMPOSITOR SW67612:

To configure the Converter, use the available software that runs with Windows called SW67612. It is downloadable on the site www.adfweb.com and its operation is described in this document. *(This manual is referenced to the last version of the software present on our web site)*. The software works with MSWindows (XP, Vista, Seven, 8; 32/64bit).

When launching the SW67612, the window below appears (Fig. 2).

Note:
It is necessary to have installed .Net Framework 4.

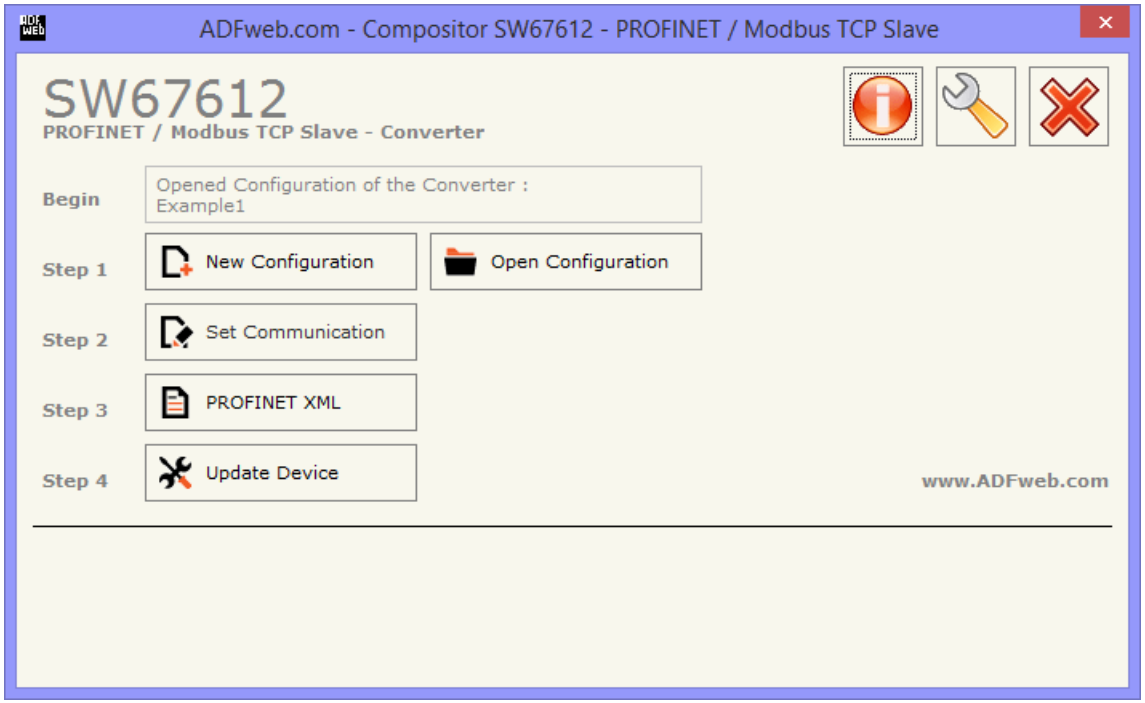
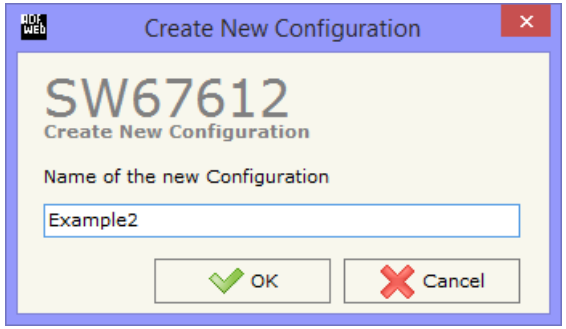


Figure 2: Main window for SW67612

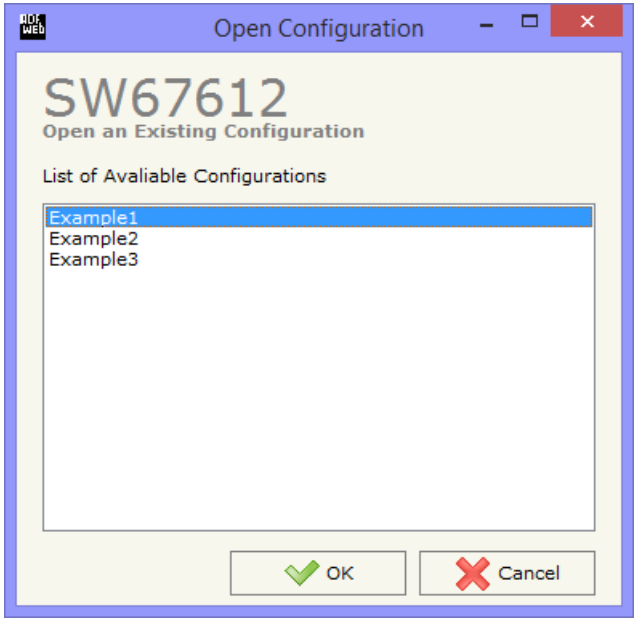
NEW CONFIGURATION / OPEN CONFIGURATION:

The "**New Configuration**" button creates the folder which contains the entire device's configuration.



A device's configuration can also be imported or exported:

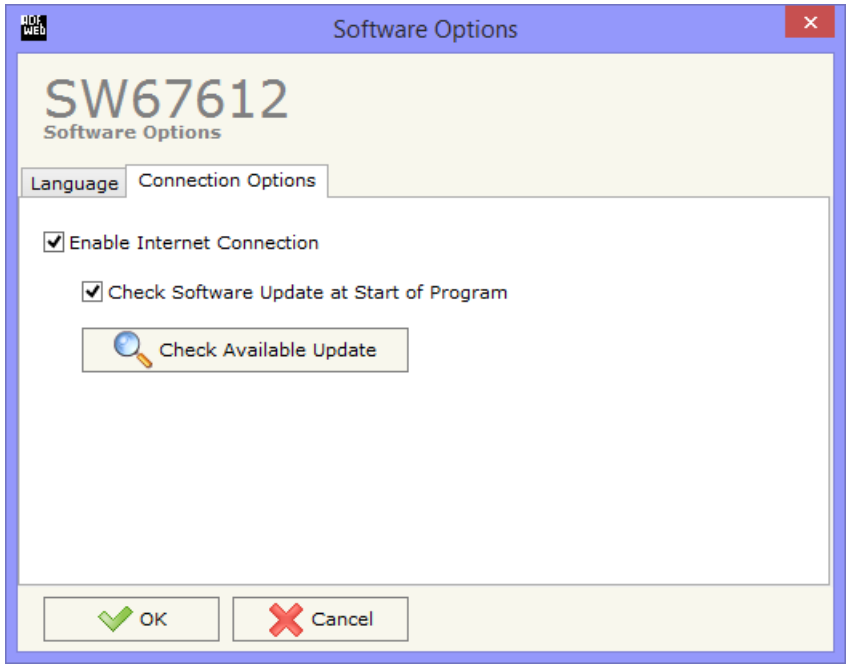
- To clone the configurations of a Programmable "PROFINET Slave / Modbus TCP Slave - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button "**Open Configuration**".



SOFTWARE OPTIONS:

By pressing the "**Settings**" ( ) button there is the possibility to change the language of the software and check the updatings for the compositor.

In the section "Language" it is possible to change the language of the software.



In the section "Connection Options", it is possible to check if there are some updatings of the software compositor in ADFweb.com website.
Checking the option "**Check Software Update at Start of Program**", the SW67612 check automatically if there are updatings when it is launched.

SET COMMUNICATION:

This section define the fundamental communication parameters of two buses, PROFINET and Modbus.

By Pressing the "**Set Communication**" button from the main window for SW67612 (Fig. 2) the window "Set Communication" appears (Fig. 3).
The window is divided in two sections, one for the PROFINET and the other for the Modbus TCP Slave.

The means of the fields for "PROFINET" are:

- In the fields "**IP ADDRESS**" insert the IP address that you want to give to the Converter (PROFINET side);
- In the fields "**SUBNET Mask**" insert the SubNet Mask (PROFINET side);
- In the fields "**GATEWAY**" insert the default gateway that you want to use. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net (PROFINET side);
- In the field "**Port**" the port used for PROFINET communication is defined. The port has a fixed value of 34964;
- In the field "**PROFINET Name of Station**" is possible to assign a name to the PROFINET node;
- In the fields "**Number Byte IN**" insert the number of input byte of the slave station;
- In the fields "**Number Byte Out**" insert the number of output byte of the slave station.

The means of the fields for the "Modbus TCP Slave" section are:

- In the fields "**IP ADDRESS**" insert the IP address that you want to give to the Converter (Modbus TCP side);
- In the fields "**SUBNET Mask**" insert the SubNet Mask (Modbus TCP side);
- In the fields "**GATEWAY**" insert the default gateway that you want to use. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net (Modbus TCP side);
- In the field "**Port**" the port used for Modbus communication is defined.

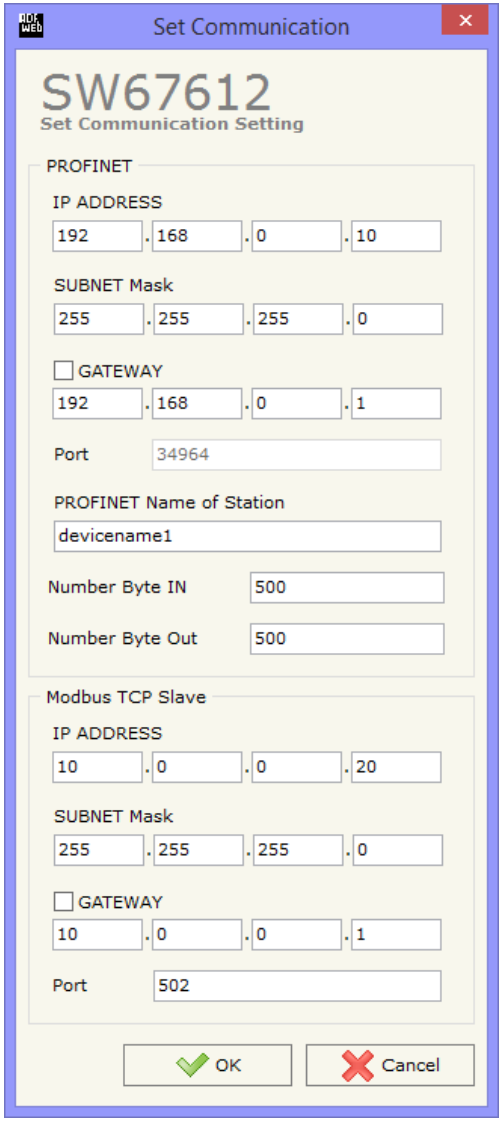


Figure 3: "Set Communication" window

XML FILE:

By Pressing the "**PROFINET XML**" button from the main window for SW67612 (Fig. 2) it is possible to generate the xml file to be imported into the master PROFINET.

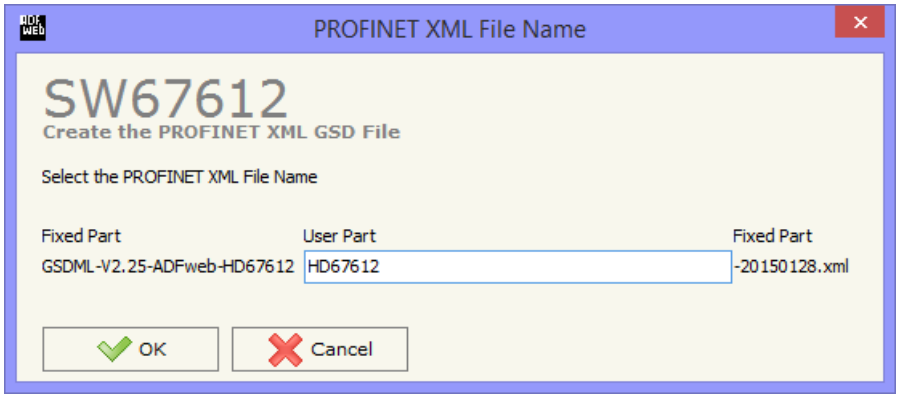


Figure 4: "PROFINET XML File Name" window

UPDATE DEVICE:

By pressing the "**Update Device**" button it is possible to load the created Configuration into the device; and also the Firmware, if is necessary.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn off the Device;
- Put Dip2 of 'Dip-Switch A' at ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP "**192.168.2.205**";
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" turn off the Device;
- Put Dip2 of 'Dip-Switch A' at OFF position;
- Turn on the device.

At this point the configuration/firmware on the device is correctly updated.

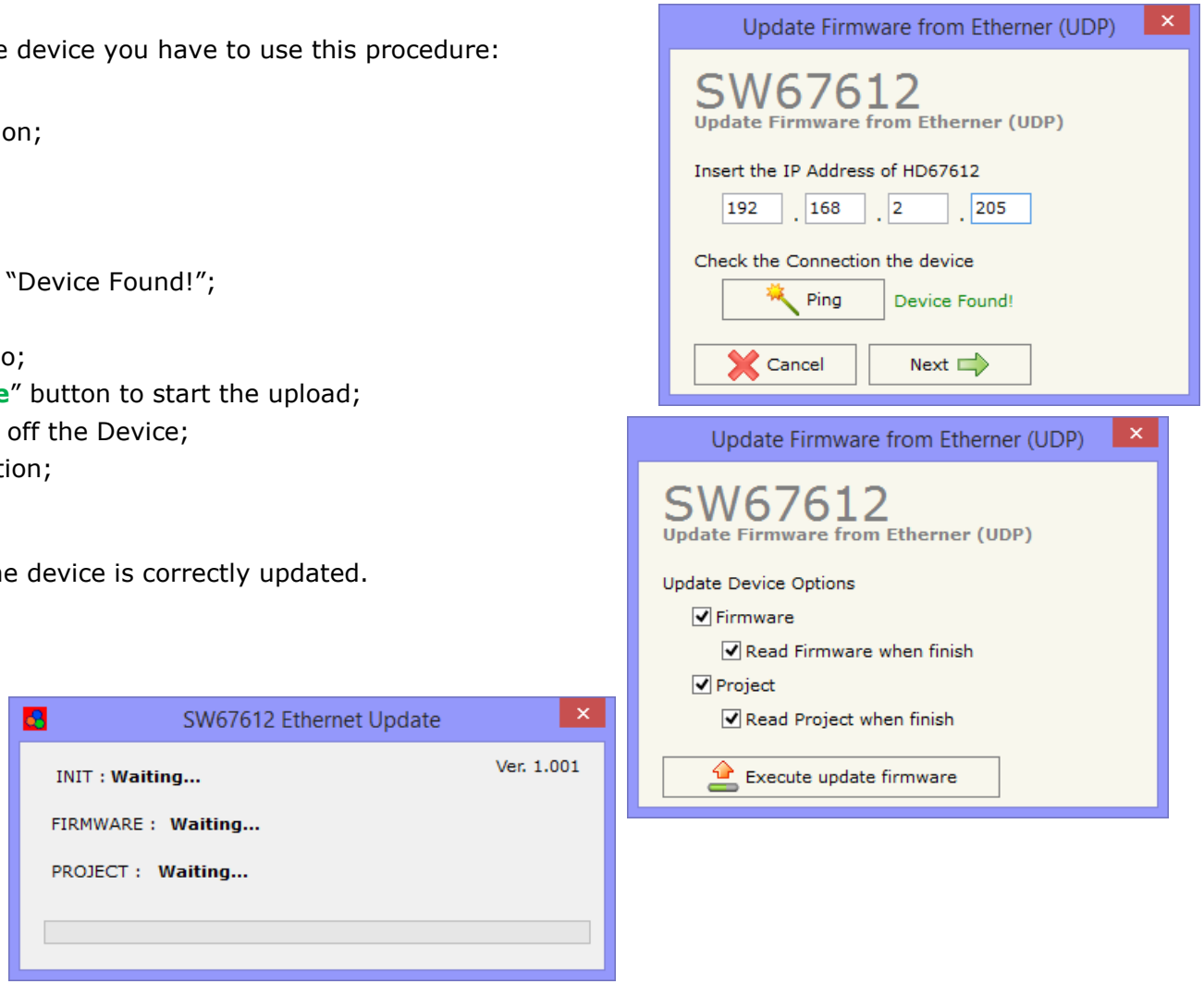


Figure 5: "Update device" windows

If you know the actual IP address of the device you have to use this procedure:

- Turn on the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" the device automatically goes at Normal Mode.

At this point the configuration/firmware on the device is correctly update.

Note:
When you install a new version of the software it is better if the first time you do the update of the Firmware in the HD67612-A1 device.

Note:
When you receive the device, for the first time, you have to update also the Firmware in the HD67612-A1 device.

Warning:
If the Fig. 7 appears when you try to do the Update before require assistance try these points:

- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven or Vista or 8, make sure that you have the administrator privileges;
- Take attention at Firewall lock;
- Check the LAN settings.

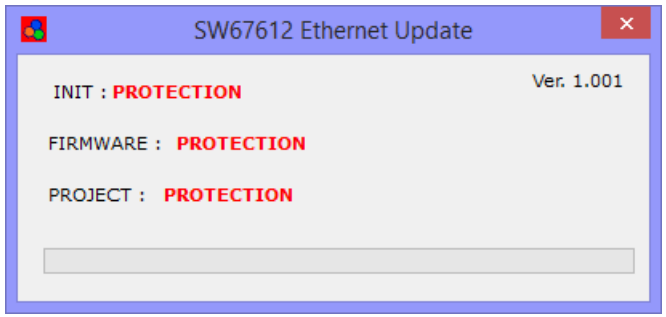


Figure 6: "Protection" window

In the case of HD67612-A1you have to use the software "SW67612": www.adfweb.com\download\filefold\SW67612.zip.

MECHANICAL DIMENSIONS:

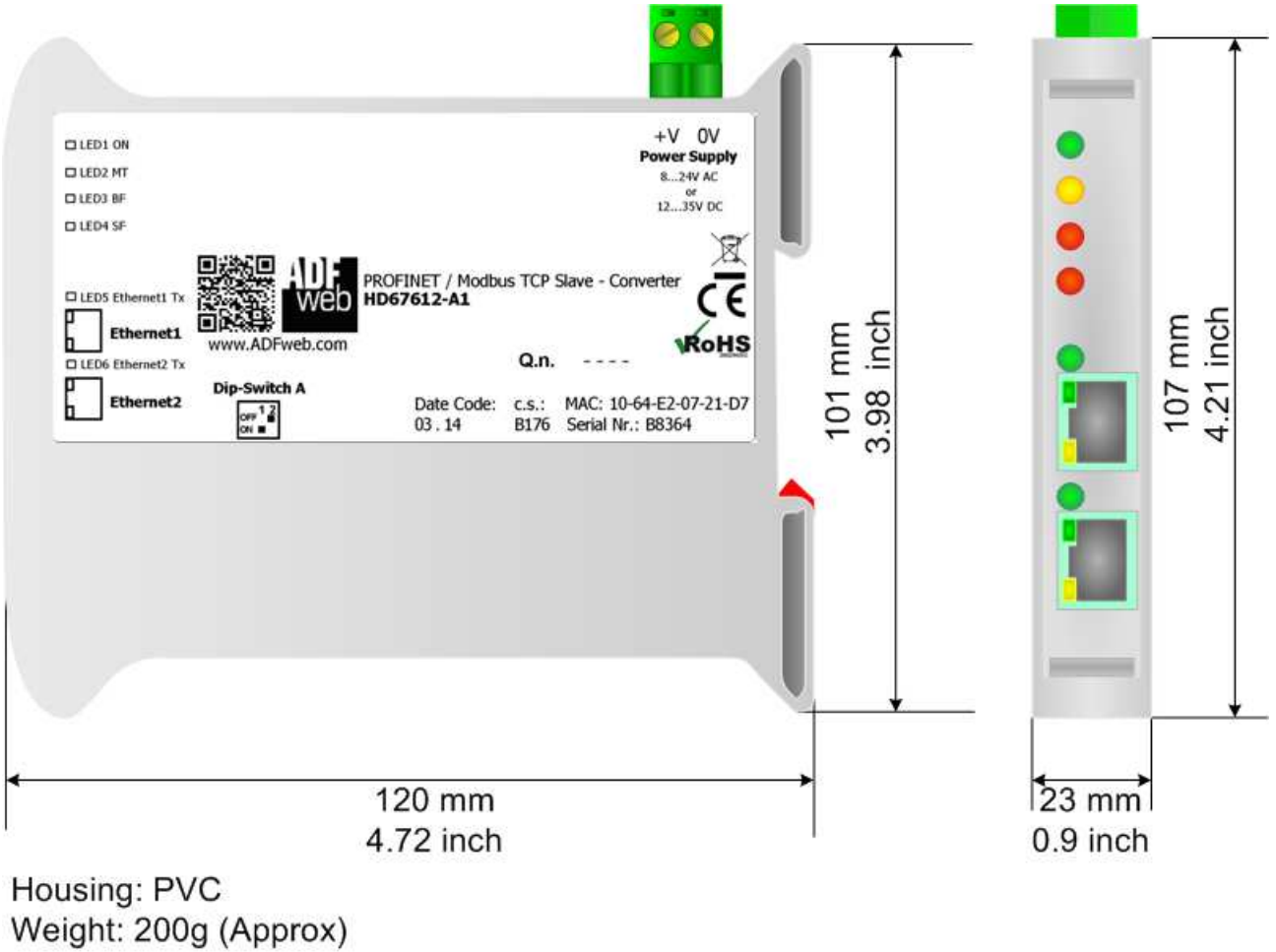


Figure 7: Mechanical dimensions scheme for HD67612-A1

ORDERING INFORMATIONS:

The ordering part number is formed by a valid combination of the following:

HD67612 – A 1

Connectors Type
1: Removable 5mm Screw Terminal

Enclosure Type
A: 1M, 35mm DIN Rail mounting

Device Family
HD67612: PROFINET / Modbus TCP Slave - Converter

Order Code: **HD67612-A1** **-** Converter PROFINET / Modbus TCP Slave Converter

ACCESSORIES:

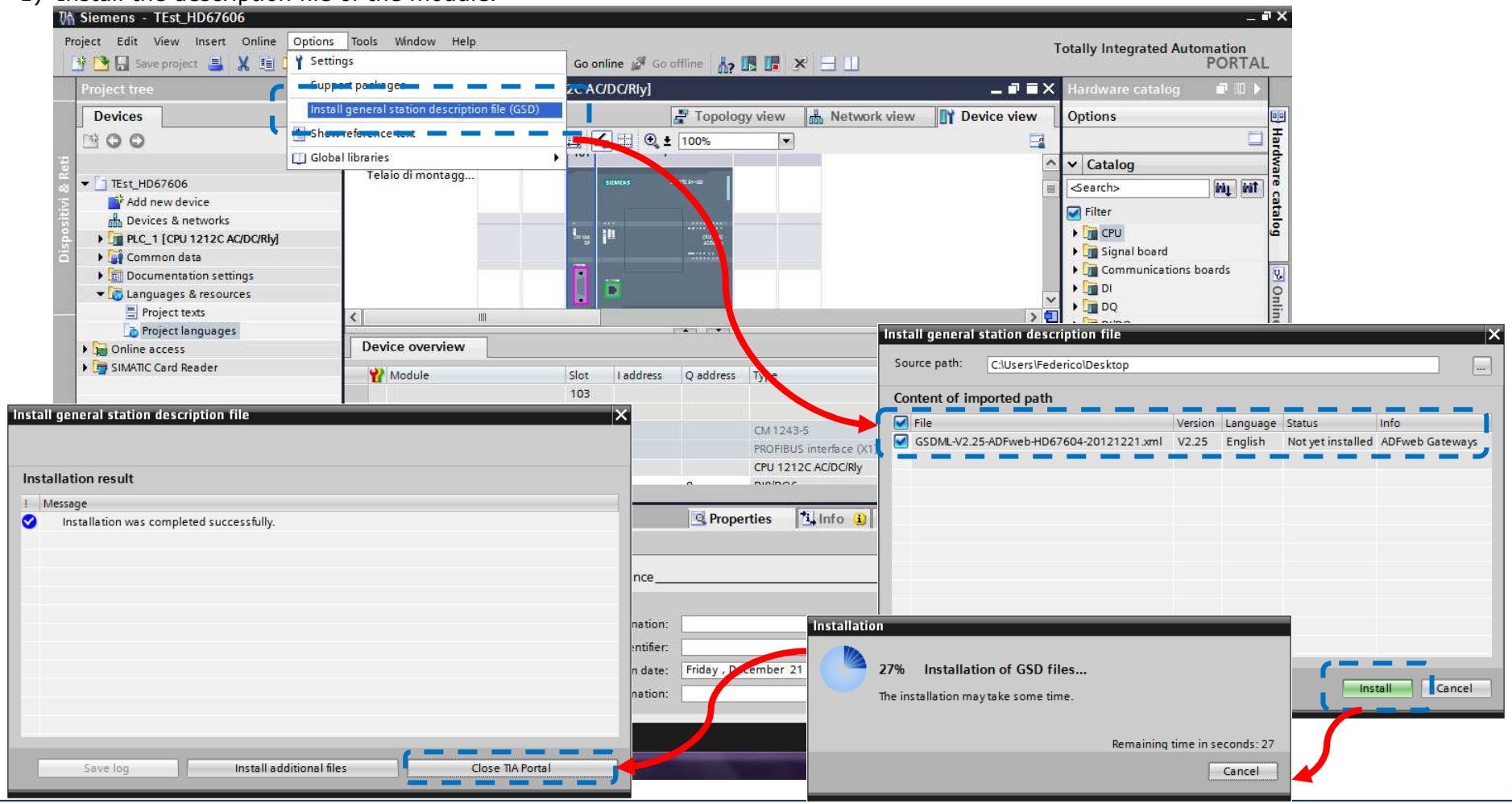
Order Code: **AC34001** **-** 35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V AC

Order Code: **AC34002** **-** 35mm Rail DIN - Power Supply 110V AC 50/60Hz – 12 V AC

PLC CONFIGURATION:

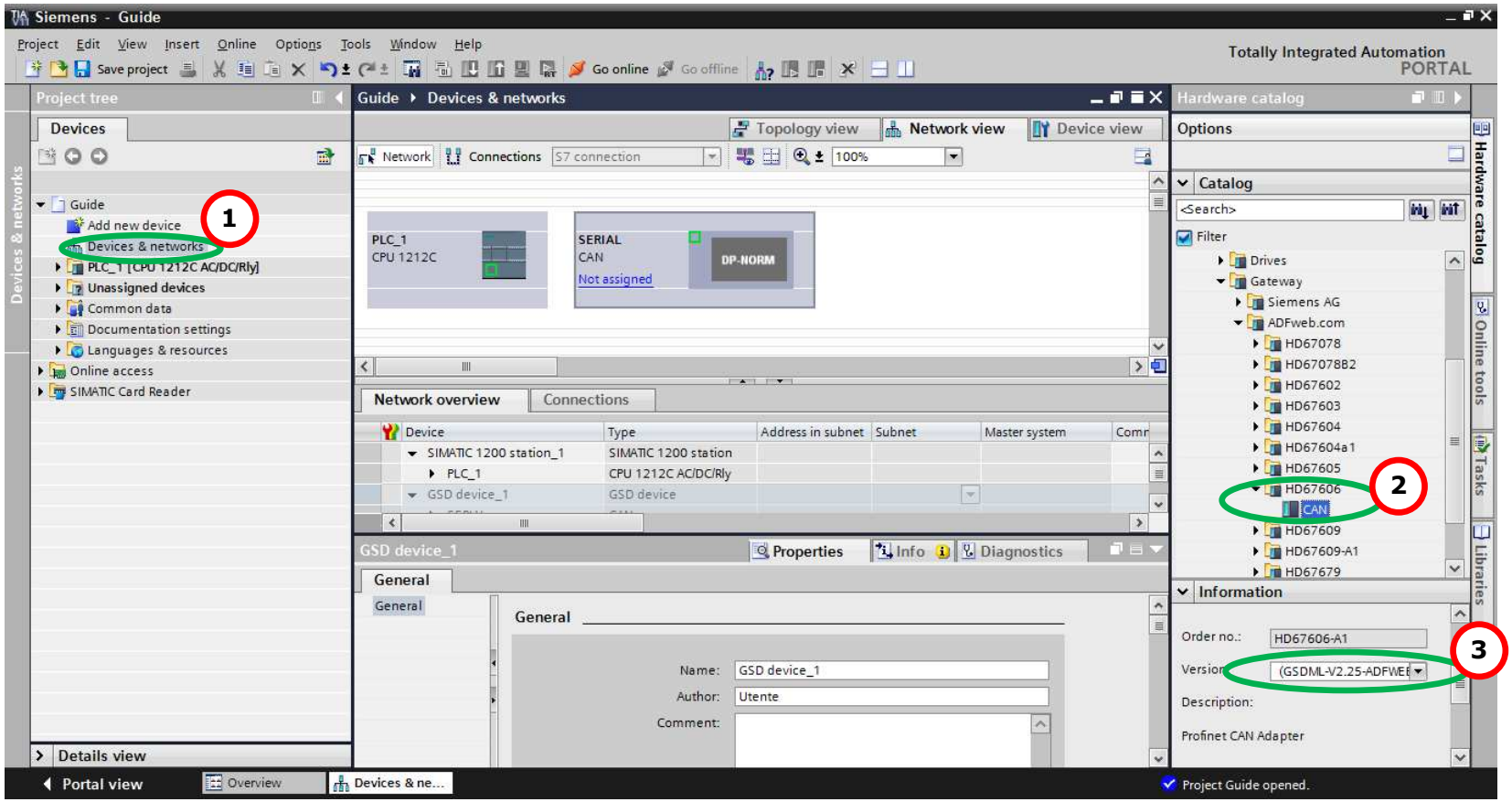
The configuration and commissioning of the PROFINET Converter as described on the following pages was accomplished with the help of the TIA Portal V11-software by Siemens. In the case of using a control system from another supplier, refer to attend to the associated documentation.
These are the steps to follow:

1) Install the description file of the module.

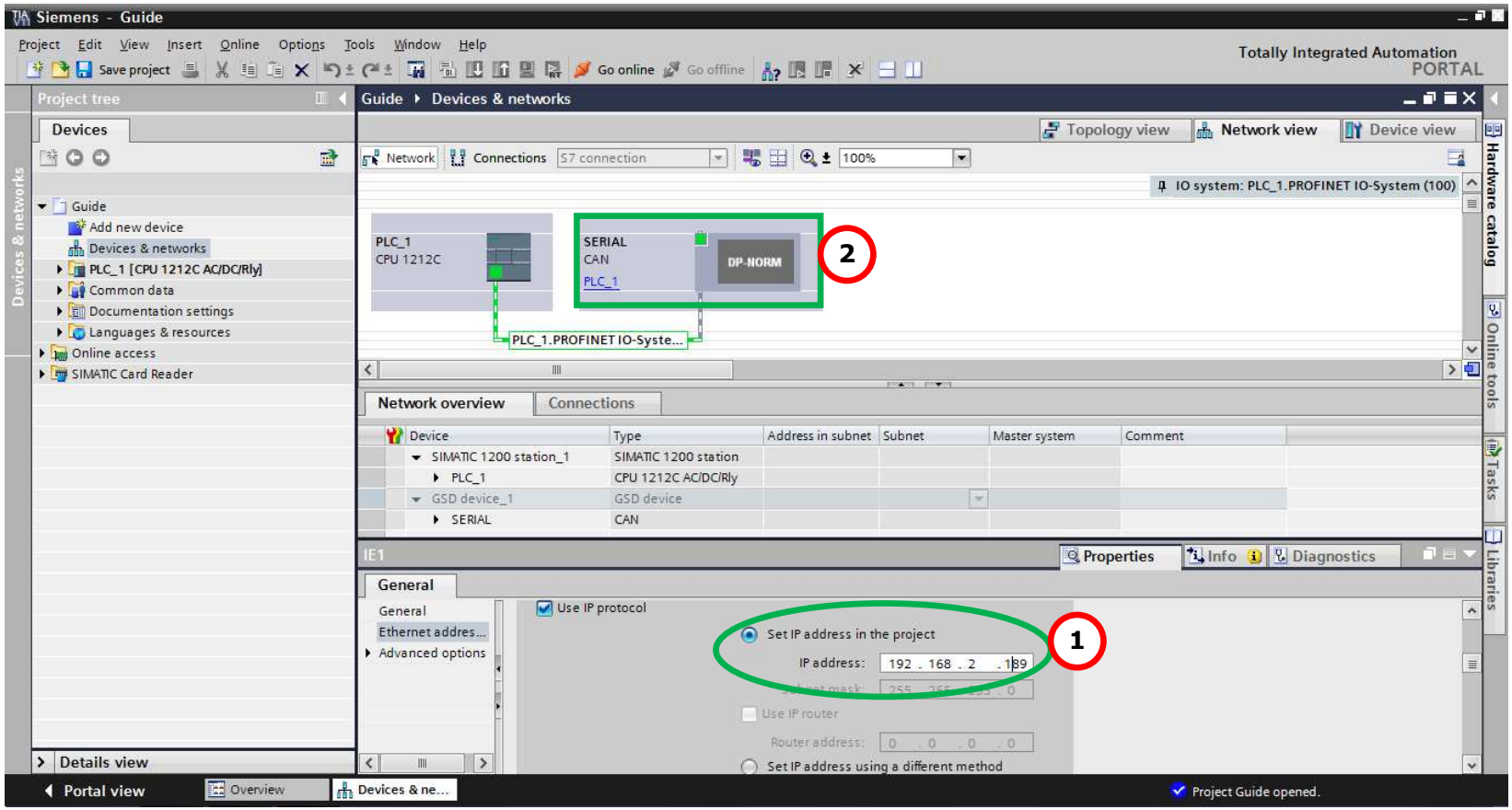


2) Press the "**Devices and networks**" button ***(1)***, from the right drop-down menu, under "Other field devices→PROFINET IO→Gateway→ADFWEB.com→HD67612" double click on "modbus" module ***(2)***.

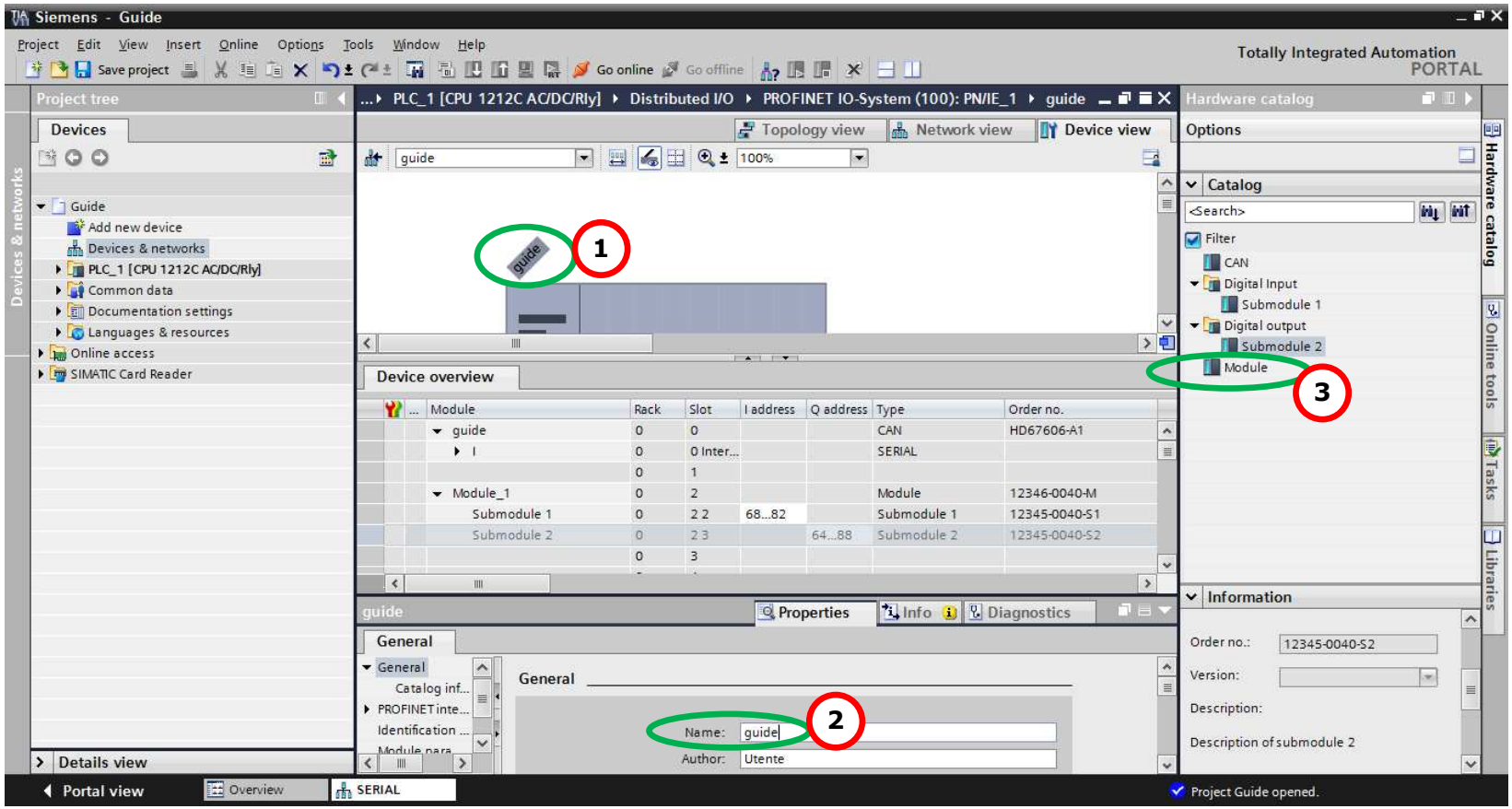
Note:
If you have installed more than one GSD file, go to the Information section and in the "Version" field select the correct gsd file ***(3)***, before double clicking on "modbus" module



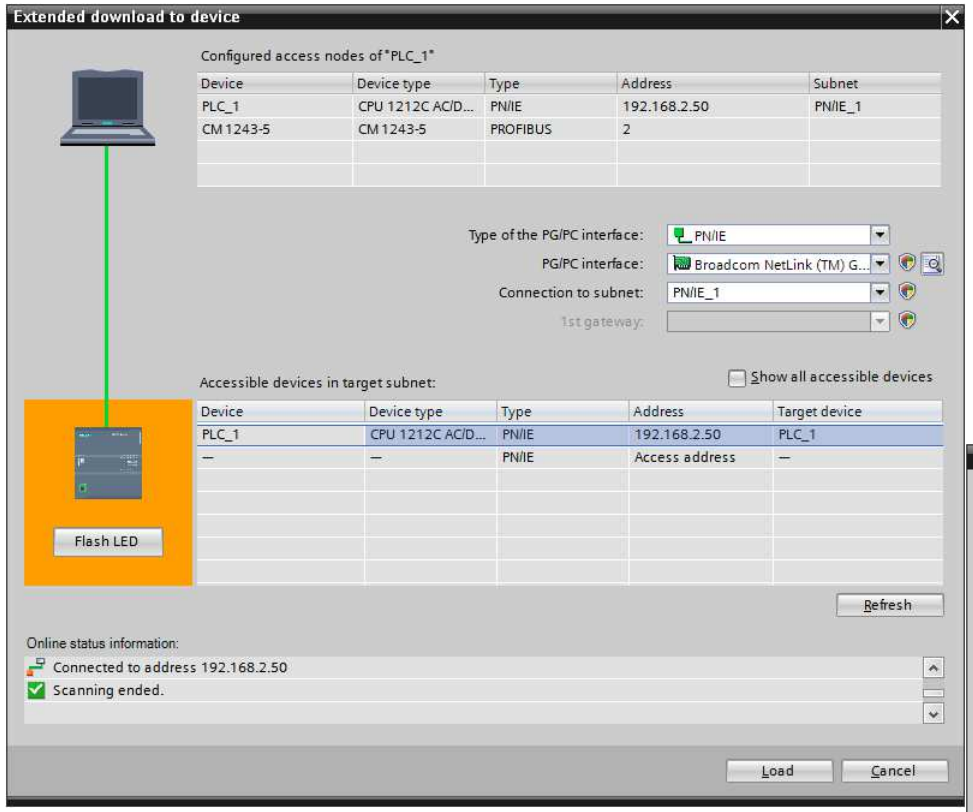
3) Connect the PLC to the HD67612 module by drawing the Ethernet wire between the two Ethernet ports. Then assign the IP Address ***(1)*** defined in the Compositor_SW67612 to the HD67612-A1. Then double click the "Module" ***(2)***.

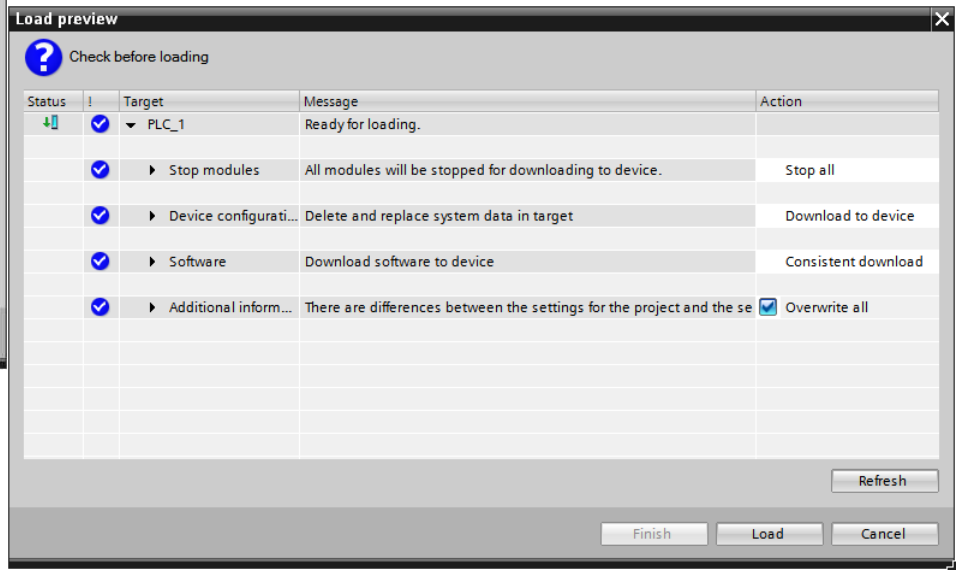


4) Then double click on the "Serial" label ***(1)*** and in the field name change it accordingly to the name defined in the Compositor_SW67612 ***(2)***. Then add the main module "Module" by double click on the item called "Module ***(3)***.



5) Load the configuration into the PLC.





DISCLAIMER:

All technical content within this document can be modified without notice. The content of the document is a under continual renewal.
For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com S.r.l. shall not be liable for consequences of improper use.

OTHER REGULATIONS AND STANDARDS:

WEEE INFORMATION

Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).

This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and impact of human health, which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE

The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

CE MARKING

The product conforms with the essential requirements of the applicable EC directives.

WARRANTIES AND TECHNICAL SUPPORT:

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at www.adfweb.com.
Otherwise contact us at the address support@adfweb.com

RETURN POLICY:

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

- Obtain a Product Return Number (PRN) from our internet support at www.adfweb.com. Together with the request, you need to provide detailed information about the problem.
- Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks. If the product is no longer under warranty, you will receive a repair estimate.

ADFweb.com S.r.l.
Via Strada Nuova, 17
IT-31010 Mareno di Piave
TREVISO (Italy)
Phone +39.0438.30.91.31
Fax +39.0438.49.20.99
www.adfweb.com